FERNALD CLEANUP PROGRESS BRIEFING
OCTOBER 1999

6:30 p.m.	Opening Remarks	Gary Stegner
6:35 p.m.	Status of Major Projects - Silo 3 - Accelerated Waste Retrieval	Nina Akgündüz
7:00 p.m.	Silos 1 and 2 Revised Feasibility Study - Status - Upcoming Activities - Detailed Analysis of Alternatives	Terry Hagen
8:00 p.m.	Question and Answer Session	
8:25 p.m.	Review of Action Items	
8:30 p.m.	Adjourn	

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Graphics # 6003.0A 10/99

SILO 3
PROJECT STATUS

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- Project on schedule (12/98 - 4/03)

- Currently reviewing:

  - Treatment facility preliminary design

  - 50% Safety Basis document

SILO 3
UPCOMING ACTIVITIES

- Draft Remedial Design Package due to regulators
  - June 1, 2000

- Rocky Mountain Remediation Services (RMRS) scheduled to begin construction - Sept. 2000
  - Fluor Daniel Fernald negotiating with RMRS for early summer mobilization

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SILOS 1 AND 2 ACCELERATED WASTE RETRIEVAL PROJECT PROJECT STATUS

- Finalized contractor submittals

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- Held update meeting with OEPA and U.S. EPA
  - Sept. 1, 1999

SILOS 1 AND 2 ACCELERATED WASTE RETRIEVAL UPCOMING ACTIVITIES

- Developing Safety Basis Document
  - Due date, Oct. 31, 1999
- Preparing Preliminary Design Package
  - Due date, Oct. 31, 1999

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SILOS 1 AND 2
REVISED FEASIBILITY STUDY (FS)
STATUS

- Addressed Proof-of-Principle Test Report comments from:
  - Critical Analysis Team (CAT)
  - DOE Independent Review Team (DIRT)
  - OEPA and U.S. EPA
  - Stakeholders
- Held alignment meetings with DOE, regulators, CAT and DIRT on key issues/assumptions related to Detailed Analysis of Alternatives and Comparative Analysis of Alternatives

SILOS 1 AND 2
REVISED FEASIBILITY STUDY (FS)
STATUS

- Conducted Fluor Daniel Fernald review of internal Draft FS from Aug. 23 - Sept. 10, 1999
- Submitted internal Draft FS to DOE and CAT for review Sept. 24, 1999
- Submittal of comments scheduled for Oct. 22, 1999

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SILOS 1 AND 2
REVISED FEASIBILITY STUDY (FS)
UPCOMING ACTIVITIES

- October 1999
  - CAT/DIRT review
  - DOE-FEMP review
  - Stakeholder briefing on Detailed Analysis
- November 1999
  - Initial discussions with Nevada stakeholders
  - Stakeholder briefing on Comparative Analysis
  - Draft FS revised, based on DOE and CAT input

SILOS 1 AND 2
REVISED FEASIBILITY STUDY (FS)
UPCOMING ACTIVITIES

- December 1999
  - Input incorporated from stakeholder briefings
  - Draft FS/PP finalized
- February 1, 2000
  - Enforceable milestone for submittal of Draft FS/PP to U.S. EPA

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Graphics # 6003.1H 10/99

REVISED FEASIBILITY STUDY
DETAILED ANALYSIS OF ALTERNATIVES
Summary of Seven CERCLA Criteria

- Overall Protection of Human Health and Environment
  - References both original FS risk assessment and Revised FS risk assessment
  - Attainment of CERCLA residual risk guidelines
- Compliance with ARARs
  - Applicable or Relevant and Appropriate Requirements
- Long-Term Effectiveness and Permanence
  - Long-term environmental impacts/NEPA values
  - Long-term maintenance of protectiveness

REVISED FEASIBILITY STUDY
DETAILED ANALYSIS OF ALTERNATIVES
Summary of Seven CERCLA Criteria

- Reduction of Toxicity, Mobility or Volume Through Treatment
  - Reduction of leachability; attainment of toxicity characteristic limits for metals
  - Reduction/increase in treated waste volume
  - Reduction of radon emanations

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REVISED FEASIBILITY STUDY
DETAILED ANALYSIS OF ALTERNATIVES
Summary of Seven CERCLA Criteria

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- Short-Term Effectiveness
  - Risks to public/workers during construction and operation
  - Risks during transportation (direct truck or intermodal)
  - Short-term environmental risks
  - Time to achieve protectiveness
  - Ability to recover schedule

REVISED FEASIBILITY STUDY
DETAILED ANALYSIS OF ALTERNATIVES
Summary of Seven CERCLA Criteria

- Implementability
    - -Technical Feasibility
        - Scale-Up
        - Commercial Demonstration
        - Operability
        - Constructability
    - - Administrative Feasibility
        - Acceptance of treated waste at Nevada Test Site

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REVISED FEASIBILITY STUDY
DETAILED ANALYSIS OF ALTERNATIVES
Summary of Seven CERCLA Criteria

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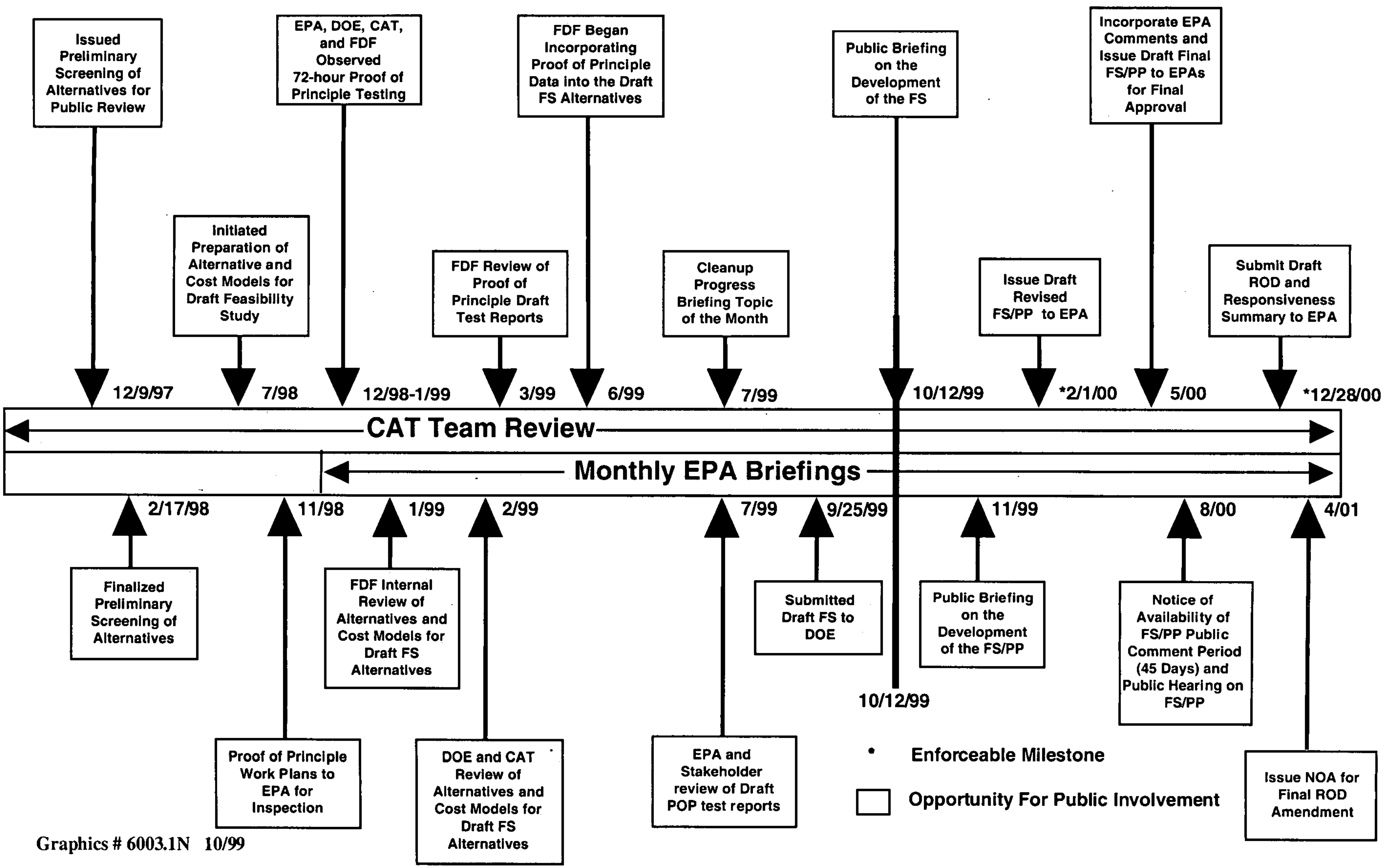
- Cost
  - Total cost for each alternative

REVISED SILOS 1 AND 2 FEASIBILITY STUDY/PROPOSED PLAN AND RECORD OF DECISION AMENDMENT SCHEDULE



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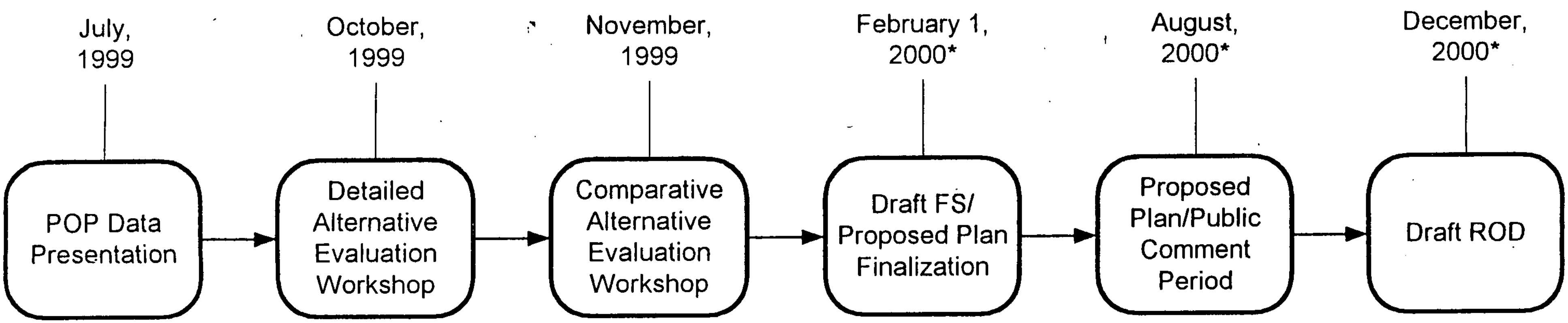
OU4 ROD AMENDMENT PUBLIC PROCESS



*Subject to Possible Acceleration

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REVISED FEASIBILITY STUDY FOR SILOS 1 AND 2
DETAILED ANALYSIS OF ALTERNATIVES SUMMARY

Vitrification – Joule-heated

OVERALL PROTECTION OF HUMAN HEALTH AND THE ENVIRONMENT

- Vitrification – Joule-heated satisfies this threshold criterion
  - Removal and off-site disposal provides long-term protection at the FEMP
  - Design and location of disposal facility provides long-term protection at the NTS
  - Short-term risks during implementation (treatment and transportation) are within CERCLA guidelines

COMPLIANCE WITH ARARS

- Vitrification – Joule-heated meets this threshold criterion

LONG-TERM EFFECTIVENESS AND PERMANENCE

- Removal and off-site disposal of Silos 1 and 2 material eliminates FEMP residual risk
- Residual risk at NTS is limited by design and location of the disposal facility and by the characteristics of the treated waste form

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REVISED FEASIBILITY STUDY FOR SILOS 1 AND 2
DETAILED ANALYSIS OF ALTERNATIVES SUMMARY

Vitrification – Joule-heated

REDUCTION OF TOXICITY, MOBILITY, OR VOLUME THROUGH TREATMENT

- Mobility (leachability) is reduced by chemically and physically binding Contaminants of Concern (COCs) into the glass matrix – POP results demonstrate attainment of the RCRA TC limits

- Vitrification process provides substantial reduction in radon emanation – NESHAP Subpart Q flux limit is attained without reliance on packaging or disposal cell cover

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- POP results (assuming monolith waste form) demonstrate volume reduction of approximately 52%. Due to shielding requirements, containerized treated material results in final disposal volume increase of 31% compared to untreated Silos 1 and 2 material.

REVISED FEASIBILITY STUDY FOR SILOS 1 AND 2
DETAILED ANALYSIS OF ALTERNATIVES SUMMARY

Vitrification – Joule-heated

SHORT-TERM EFFECTIVENESS

Short-term Risks / Impacts

- Process liberates entire inventory of radon to melter off-gas during treatment process; collection and radon removal are required to minimize release to the atmosphere. Radon removal minimizes radon emissions to assure minimal off-site impact

- Liberation of radon during treatment, and radon mitigation provided by vitrified waste form, minimize radon and associated radiation hazards concerns during packaging, transportation, and disposal.

- Location and controls at NTS minimize short-term impacts during disposal

- Approximately 1,199 direct truck shipments, or intermodal combination of 1,199 truck shipments and 600 railcar shipments required for transportation of treated Silos 1 and 2 material to NTS.

- High-temperature operation and power requirements result in additional physical hazards compared to ambient temperature operation

- Short-term risks to public and workers due to transportation are within CERCLA guidelines

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REVISED FEASIBILITY STUDY FOR SILOS 1 AND 2
DETAILED ANALYSIS OF ALTERNATIVES SUMMARY

Vitrification – Joule-heated

<u>SHORT-TERM EFFECTIVENESS</u> (cont.)

Time to Achieve Protectiveness

- Design, construction, and start-up requires 60 months

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- 24-hour/day, 7-day/week operation required to complete treatment within 3 years – no excess operating time is available to recover from unplanned downtime

- Completion of treatment in less than three years can be accomplished through addition of additional melter trains. Additional melter trains, along with increases in off-gas, feed preparation, and product storage capacity, result in increased cost.

REVISED FEASIBILITY STUDY FOR SILOS 1 AND 2
DETAILED ANALYSIS OF ALTERNATIVES SUMMARY

Vitrification – Joule-heated

<u>IMPLEMENTABILITY</u>

- Several Implementability issues are common to all four alternatives:
  - Feed preparation issues due to abrasive, high solids content of Silos 1 and 2 material, multiple operations required to provide an acceptable feed stream, and stringent additive metering requirements
  - Difficult product handling due to multiple operations, requirements for specialized equipment adapted for remote operations
  - Adaptation of commercially available equipment to function under remote operation

Technical Feasibility

Commercial Demonstration / Scale-up

- 15 TPD capacity proposed on POP vendor design represents 45 to 1 scale-up from POP demonstration unit
- Vitrification of Silos 1 and 2 material successfully demonstrated at laboratory and bench scale; 15 tons per day (TPD) capacity has not been demonstrated on radioactive / hazardous waste slurries
- Limited number of commercial applications on Silos 1 and 2-like material

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REVISED FEASIBILITY STUDY FOR SILOS 1 AND 2
DETAILED ANALYSIS OF ALTERNATIVES SUMMARY

Vitrification – Joule-heated

IMPLEMENTABILITY (cont.)

Technical Feasibility

Operability

- Many components are commercially available with demonstrated reliability

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- Operability concerns include integrated operation of complex systems (waste treatment and off-gas) and long-term performance of custom-built items
- DOE vitrification on high-level radioactive waste applications have exceeded 70% availability once successful start-up is achieved
- Complex equipment requirements, field fabrication of melter, and handling of refractory materials complicate construction and D&D

Administrative Feasibility

- Interaction with NTS indicates that Silos 1 and 2 material, treated by Joule-heated Vitrification to meet the NTS WAC, will be approvable for disposal at the NTS.
- Addendum to the NTS Performance Assessment will confirm the depth and configuration for disposal

REVISED FEASIBILITY STUDY FOR SILOS 1 AND 2
DETAILED ANALYSIS OF ALTERNATIVES SUMMARY

Vitrification – Joule-heated

<u>COST</u> (in Millions)

Capital Cost	$66
Engineering Cost	$25
Operation and Maintenance Cost	$101
D&D Cost	$35
Project Management Cost	$22
Waste Disposal Cost	$26
Cost of Money	$17
SUMMARY COST (un-escalated)	$292

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REVISED FEASIBILITY STUDY FOR SILOS 1 AND 2
DETAILED ANALYSIS OF ALTERNATIVES SUMMARY

Vitrification - Other

<u>OVERALL PROTECTION OF HUMAN HEALTH AND THE ENVIRONMENT</u>

- Vitrification – Other satisfies this threshold criterion
- Detailed Analysis is equivalent to that for Vitrification – Joule-heated

<u>COMPLIANCE WITH ARARS</u>

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- Vitrification – Other satisfies this threshold criterion

<u>LONG-TERM EFFECTIVENESS AND PERMANENCE</u>

- Detailed Analysis is equivalent to that for Vitrification – Joule-heated; impact of slightly higher treated waste volume is not significant

REVISED FEASIBILITY STUDY FOR SILOS 1 AND 2
DETAILED ANALYSIS OF ALTERNATIVES SUMMARY

Vitrification – Other

<u>REDUCTION OF TOXICITY, MOBILITY, OR VOLUME THROUGH TREATMENT</u>

- Reduction in contaminant mobility and radon emanation equivalent to that for Vitrification – Joule heated
- Reduction in volume, not including packaging equivalent to that accomplished by Vitrification – Joule heated
- POP results (based upon frit waste form) demonstrated a volume reduction of 2%. Due to shielding requirements, containerized treated material results in a final disposal volume increase of 85% compared to untreated Silos 1 and 2 material.

REVISED FEASIBILITY STUDY FOR SILOS 1 AND 2
DETAILED ANALYSIS OF ALTERNATIVES SUMMARY

Vitrification – Other

SHORT-TERM EFFECTIVENESS

Short-term Risks / Impacts

- Short-term environmental impacts and on-site worker risks are equivalent to those for Vitrification – Joule heated
- Approximately 1081 direct truck shipments, or intermodal combination of 1081 truck shipments and 541 railcar shipments required for transportation of treated Silos 1 and 2 material to NTS
- Short-term risks to public and workers due to transportation are within CERCLA guidelines

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Time to Achieve Protectiveness

- Design, construction, and start-up requires 60 months
- The POP design required 24-hour/day, 7-day/week operation to complete treatment within 3 years – no excess operating time available to recover from unplanned downtime
- Processes have been demonstrated at capacities in excess of 15 TPD; treatment could be completed in less than three years by implementing the alternative with a higher-capacity reactor.
- Any schedule acceleration would result in increased cost due to increase in reactor capacity along with the necessary increases in off-gas, feed preparation, and product storage capacity

REVISED FEASIBILITY STUDY FOR SILOS 1 AND 2
DETAILED ANALYSIS OF ALTERNATIVES SUMMARY
Vitrification – Other

IMPLEMENTABILITY

Technical Feasibility

Commercial Demonstration / Scale up

- POP demonstration unit utilized a 15 TPD melter; - Scale-up to 15 TPD is not a concern
- The technology has been demonstrated at pilot scale on mixed waste and metals-contaminated soil; demonstrated on a commercial scale on hazardous wastes, but no significant commercial experience in a radioactive environment
- Significant development required to optimize integrated operation of complex off-gas system, as well as to demonstrate application of the centrifuge and hot-oil screw dryer to the Silos 1 and 2 material

Operability

- Many components are commercially available with demonstrated reliability
- Operability, reliability, and constructability/D&D issues analogous to Vitrification - Joule-heated
- DOE vitrification applications have exceeded 70% availability once successful start-up is achieved
- Rework system for a frit waste form is straightforward.

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REVISED FEASIBILITY STUDY FOR SILOS 1 AND 2
DETAILED ANALYSIS OF ALTERNATIVES SUMMARY

Vitrification – Other

IMPLEMENTABILITY (cont.)

Administrative Feasibility

- Interaction with NTS indicates that Silos 1 and 2 material, treated by Vitrification – Other to meet the NTS WAC, will be approvable for disposal at the NTS.

- Addendum to the NTS Performance Assessment will confirm the depth and configuration for disposal

REVISED FEASIBILITY STUDY FOR SILOS 1 AND 2
DETAILED ANALYSIS OF ALTERNATIVES SUMMARY

Vitrification – Other

Cost (in Millions)

Capital Cost	$66
Engineering Cost	$25
Operation and Maintenance Cost	$110
D&D Cost	$38
Project Management Cost	$22
Waste Disposal Cost	$22
Cost of Money	$18
SUMMARY COST (un-escalated)	$301

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REVISED FEASIBILITY STUDY FOR SILOS 1 AND 2
DETAILED ANALYSIS OF ALTERNATIVES SUMMARY

Chemical Stabilization – Cement-based

<u>OVERALL PROTECTION OF HUMAN HEALTH AND THE ENVIRONMENT</u>

- Chemical Stabilization – Cement-based satisfies this threshold criterion
- Detailed Analysis is equivalent to that for Vitrification – Joule-heated

<u>COMPLIANCE WITH ARARS</u>

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- Chemical Stabilization – Cement-based satisfies this threshold criterion

<u>LONG-TERM EFFECTIVENESS AND PERMANENCE</u>

- Detailed Analysis is equivalent to that for Vitrification – Joule-heated; impact of higher treated waste volume is not significant based upon discussion with NTS

Chemical Stabilization – Cement-based

REDUCTION OF TOXICITY, MOBILITY, OR VOLUME THROUGH TREATMENT

- Mobility (leachability) is reduced by converting COCs into a less leachable form and/or chemically or physically binding them in a cement matrix – POP results demonstrated attainment of the RCRA TC limits

- Data from original FS (with lower waste loading) showed reduction in radon emanation of 78-87%; radon flux from unpackaged stabilized Silos 1 and 2 material would exceed NESHAP Subpart Q flux limit.

- Combination of treatment, disposal container, and disposal cell cover attains NESHAP Subpart Q limit upon disposal

- POP testing demonstrate volume increase of 207%. Due to shielding requirements, containerized treated material results in final disposal volume increase of 436% compared to untreated Silos 1 and 2 material

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REVISED FEASIBILITY STUDY FOR SILOS 1 AND 2
DETAILED ANALYSIS OF ALTERNATIVES SUMMARY

Chemical Stabilization – Cement-based

SHORT-TERM EFFECTIVENESS

Short-term Risks / Impacts

- Process liberates only a portion of the radon inventory during treatment. Radon generation continues during product handling and packaging. Collection and radon removal from these streams is required to minimize release to the environment. Radon removal minimizes radon emissions to assure minimal off-site impact

- Location and controls at NTS minimize short-term impacts during disposal

- 32 Approximately 3039 direct truck shipments, or intermodal combination of 3039 truck shipments and 1520 railcar shipments required for transportation of treated Silos 1 and 2 material to NTS.

- Short-term risks to public and workers due to transportation are within CERCLA guidelines

REVISED FEASIBILITY STUDY FOR SILOS 1 AND 2
DETAILED ANALYSIS OF ALTERNATIVES SUMMARY

Chemical Stabilization – Cement-based

SHORT-TERM EFFECTIVENESS (cont.)

Time to Achieve Protectiveness

- Design, construction, and start-up requires 53 months
- 16-hour/day, 5-day/week operation required to complete treatment within 3 years – leaves excess capacity available for short-term acceleration to recover from unplanned downtime
- Completion of treatment in less than three years can be accomplished through full-time operation (24-hour/day, 7-days per week) using existing equipment. Additional acceleration could be accomplished through use of additional mixer trains.
- Any schedule acceleration would result in increased capital costs for increases in feed preparation, and product storage capacity

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REVISED FEASIBILITY STUDY FOR SILOS 1 AND 2
DETAILED ANALYSIS OF ALTERNATIVES SUMMARY

Chemical Stabilization – Cement-based

IMPLEMENTABILITY

Technical Feasibility

Commercial Demonstration / Scale up

- POP demonstration unit designed for 8 TPD and operated at 2.15 TPD; 10x scale up required to achieve proposed full-scale capacity of 80 TPD

- Development required to resolve material handling issues associated with physical properties (sticky, non-flowing) of treated waste form, avoid plugging or caking of mixer internals, etc. Development also required to adapt commercially-available equipment to facilitate radon control and remote operations

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- Ability to treat Silos 1 and 2 and similar materials using Chemical Stabilization – Cement-based process has been demonstrated in numerous laboratory, bench, and commercial-scale applications

- Many commercial and DOE (West Valley) applications on radioactive, hazardous, and mixed wastes; a small number have been operated in a remote environment.

- Batch plants exceeding the POP-proposed capacity exist; no facilities operated remotely, on Silo 1 and 2-like material, at the required capacity have been identified.

REVISED FEASIBILITY STUDY FOR SILOS 1 AND 2
DETAILED ANALYSIS OF ALTERNATIVES SUMMARY

Chemical Stabilization – Cement-based

<u>IMPLEMENTABILITY</u> (cont.)

Technical Feasibility

Operability

- Most individual components are commercially available with demonstrated reliability, but must be adapted for radon confinement and remote operations
- Automated batch operations, standard equipment requirements and simplified operating requirements
- Solidification of cement on wetted components has hampered operability and maintainability in some commercial / DOE applications.
- Operability concerns include effectiveness of de-watering, impact of material handling issues on waste loading, facility ventilation / radon control, and remote operation of container handling equipment
- Particulates and radon are only air emission concerns
- Rework system is relatively complex due to removal, size reduction, and transfer of solidified waste form
- Conventional construction, fabrication, and D&D requirements

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REVISED FEASIBILITY STUDY FOR SILOS 1 AND 2
DETAILED ANALYSIS OF ALTERNATIVES SUMMARY

Chemical Stabilization – Cement-based

<u>IMPLEMENTABILITY</u> (cont.)

Administrative Feasibility

- Interaction with NTS indicates that Silos 1 and 2 material, treated by Chemical Stabilization – cement-based to meet the NTS WAC, will be approvable for disposal at the NTS.

- Addendum to the NTS Performance Assessment will confirm the depth and configuration for disposal

REVISED FEASIBILITY STUDY FOR SILOS 1 AND 2
DETAILED ANALYSIS OF ALTERNATIVES SUMMARY

Chemical Stabilization – Cement-based

Cost (in Millions)

Capital Cost	$53
Engineering Cost	$24
Operation and Maintenance Cost	$57
D&D Cost	$34
Project Management Cost	$21
Waste Disposal Cost	$58
Cost of Money	$15
SUMMARY COST (un-escalated)	$262

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REVISED FEASIBILITY STUDY FOR SILOS 1 AND 2
DETAILED ANALYSIS OF ALTERNATIVES SUMMARY

Chemical Stabilization – Other

OVERALL PROTECTION OF HUMAN HEALTH AND THE ENVIRONMENT

- Chemical Stabilization – Other satisfies this threshold criterion
- Detailed Analysis is equivalent to that for Vitrification – Joule-heated

COMPLIANCE WITH ARARS

- Chemical Stabilization - Other satisfies this threshold criterion

LONG-TERM EFFECTIVENESS AND PERMANENCE

- Detailed Analysis is equivalent to that for Vitrification – Joule-heated; impact of higher treated waste volume is not significant based upon discussions with NTS

REVISED FEASIBILITY STUDY FOR SILOS 1 AND 2
DETAILED ANALYSIS OF ALTERNATIVES SUMMARY

Chemical Stabilization – Other

REDUCTION OF TOXICITY, MOBILITY, OR VOLUME THROUGH TREATMENT

- Mobility (leachability) is reduced by converting COCs into a less leachable form and/or chemically or physically binding them in a binder matrix – POP results demonstrated attainment of the RCRA TC limits
- Similar to Chemical Stabilization – Cement-based with respect to reduction in radon emanation; radon flux from stabilized Silos 1 and 2 material exceeds NESHAP Subpart Q flux limit.
- Combination of treatment, sealed disposal container, and disposal cell cover attains NESHAP Subpart Q limit upon disposal
- POP testing demonstrates volume increase of 236%. Due to shielding requirements, containerized treated material results in final disposal volume increase of 388% compared to untreated Silos 1 and 2 material

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REVISED FEASIBILITY STUDY FOR SILOS 1 AND 2
DETAILED ANALYSIS OF ALTERNATIVES SUMMARY

Chemical Stabilization – Other

<u>SHORT-TERM EFFECTIVENESS</u>

Short-term Risks / Impacts

- Process liberates only a portion of the radon inventory during treatment. Radon generation continues during product handling and packaging. Collection and radon removal from these streams is required to minimize release to the environment. Radon removal minimizes radon emissions to assure minimal off-site impact

- Location and controls at NTS minimize short-term impacts during disposal

- Approximately 3053 direct truck shipments, or intermodal combination of 3053 truck shipments and 1527 railcar shipments required for transportation of treated Silos 1 and 2 material to NTS

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- Short-term risks to public and workers due to transportation are within CERCLA guidelines

REVISED FEASIBILITY STUDY FOR SILOS 1 AND 2
DETAILED ANALYSIS OF ALTERNATIVES SUMMARY

Chemical Stabilization – Other

SHORT-TERM EFFECTIVENESS (cont.)

Time to Achieve Protectiveness

- Design, construction, and start-up requires 53 months
- 24-hour/day, 5-day/week operation required to complete treatment within 3 years – leaves excess capacity available for short-term acceleration to recover from unplanned downtime
- Completion of treatment in less than three years can be accomplished through full-time (24-hour/day, 7-days per week). Additional acceleration could be accomplished through use of additional mixer trains.
- Any schedule acceleration would result in increased capital costs for increases in feed preparation, and product storage capacity

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REVISED FEASIBILITY STUDY FOR SILOS 1 AND 2
DETAILED ANALYSIS OF ALTERNATIVES SUMMARY

Chemical Stabilization – Other

IMPLEMENTABILITY

Technical Feasibility

Commercial Demonstration / Scale up

- POP demonstration unit designed for operated at 3.67 TPD; 10x scale up required to achieve proposed full-scale capacity of 35 TPD

- Development required to adapt commercially-available equipment to facilitate radon control and remote operations

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- Ability to treat Silos 1 and 2 and similar materials using Chemical Stabilization – Other process has been demonstrated in numerous laboratory, bench, and commercial-scale applications

- Many commercial and DOE applications on radioactive, hazardous, and mixed wastes; the mixer-fill head and mixer blade assembly have been utilized at full-scale capacity at the POP vendor's facility

Chemical Stabilization - Other

IMPLEMENTABILITY (cont.)

Technical Feasibility

Operability

- Most individual components are commercially available with demonstrated reliability; must be adapted for radon confinement and remote operation
- Automated batch operations, standard equipment requirements and simplified operating requirements
- Operability concerns include effectiveness of de-watering, impact of waste loading, facility ventilation / radon control, and remote operation of container handling equipment
- Particulates and radon are only air emission concerns
- Rework system is somewhat complex due to removal, size reduction, and transfer of solidified waste form
- Multiple functions required of the mix-fill head in a remote environment add to complexity of operations
- Conventional construction, fabrication, and D&D requirements

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REVISED FEASIBILITY STUDY FOR SILOS 1 AND 2
DETAILED ANALYSIS OF ALTERNATIVES SUMMARY

Chemical Stabilization – Other

IMPLEMENTABILITY (cont.)

Administrative Feasibility

- Interaction with NTS indicates that Silos 1 and 2 material, treated by Chemical Stabilization – Other to meet the NTS WAC, will be approvable for disposal at the NTS.

- Addendum to the NTS Performance Assessment will confirm the depth and configuration for disposal

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REVISED FEASIBILITY STUDY FOR SILOS 1 AND 2
DETAILED ANALYSIS OF ALTERNATIVES SUMMARY

Chemical Stabilization – Other

Cost (in Millions)

Capital Cost	$52
Engineering Cost	$24
Operation and Maintenance Cost	$69
D&D Cost	$36
Project Management Cost	$21
Waste Disposal Cost	$57
Cost of Money	$14
SUMMARY COST (un-escalated)	$273

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REVISED FEASIBILITY STUDY FOR SILOS 1 AND 2
DETAILED ANALYSIS OF ALTERNATIVES SUMMARY

- Detailed analysis identified no fundamental differences between the two Vitrification process options nor between the two Chemical Stabilization process options

- The discriminating differences between the alternatives will consist of differences between the two treatment technologies (vitrification and chemical stabilization) as opposed to differences between the individual processes under each technology

- The Comparative Analysis will evaluate the discriminating differences between two alternatives – Vitrification and Chemical Stabilization

- Each alternative will be limited to the process options identified by the Preliminary Screening of Alternatives

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Meeting Evaluation/Comment Card
Cleanup Progress Briefing
Fernald Silos Project
October 12, 1999

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The U.S. Department of Energy would like your feedback about this meeting. Please complete this evaluation form to help us better serve your needs. Thank you.

1. The level of information presented tonight in the "Status of Major Projects" section was:

   ____ Not detailed enough

   ____ Adequate

   ____ Too detailed

   Please explain:

2. The information presented in the "Silos I and 2 Revised Feasibility Study" section was:

   ____ Not detailed enough

   ____ Adequate

   ____ Too detailed

   Please explain:

3. I better understand the path forward for the Silos Project after hearing these presentations.

   ____ Strongly Agree

   ____ Agree

   ____ Disagree

   Please explain:

4. Please list specific questions or concerns you have about the Silos Project path forward:

   ____

   ____

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   ____

- more -

6. Please provide other comments about this meeting:

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7. If you would like a Fernald representative to contact you to clarify information presented tonight please provide the following information:

Name: ____

Affiliation: ____

Daytime Phone: ____

Question/Concern____

For more information about the Silos Project, please visit DOE's Public Environmental Information Center, 10995 Hamilton-Cleves Highway, Harrison, Ohio, 45030 or visit our Web site at www.fernald.gov.